PATIENT SAFETY

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Color coding:
Important
Notes

EMR
Vertical

EHR Horizontal	Date of birth	vaccinations	allergy	Goes to hospital	Discharge report
				CBC	
				ultrasound	
				Appendicitis	
				appendectomy	
				fever	
				X ray	
				culture	
				discharge	

EHR: horizontal, across multiple organizations, and lifelong.
EMR: only one organization
EHR has broader information
EMR has more information
We can't say one is larger than the other

Discharge report will have important information about the patient, allergies, blood type, procedures, diagnosis, and serious diseases

When the patient visits the hospital after a few months these details won't be very important.

Patient Safety

Definition of Patient Safety;

- Freedom from injury or illness resulting from the processes of care
- Patient safety is the avoidance and prevention of patient injuries or adverse events resulting from the processes of healthcare delivery
  - Defined by AHRQ (Agency for Healthcare Research and Quality) and NQF (National Forum for Quality Measurement and Reporting)

Patient Safety Issues

- There are many patient safety issues: **medication errors**, **wrong site** surgery, **restraint** injuries, **falls**, retained foreign objects, **delay in diagnosis**, infant **abduction**, **misdiagnosis**, **communication** errors, transfusion errors, surgical site **infection**, **critical** lab results, **skin tears**, awareness during OR, OR fires, **MRI safety**, **infections**, **Inpatient suicides**

Delay in diagnosis could be due to:

1. Crowdedness ex. ER
2. Not taking action (not reaching the right person at the right time)
3. Miscommunication

What is Medical Error?

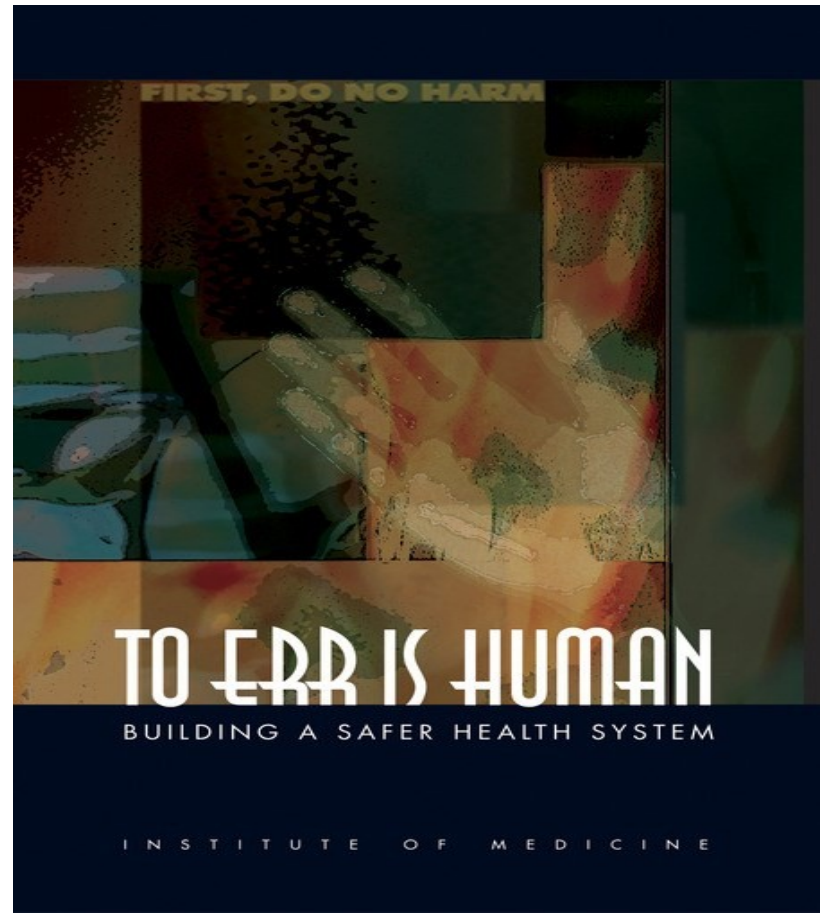
Ex. Hospital acquired infections

- Definition according to IOM
  - Failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim

- Examples:
  - adverse drug events
  - surgical injuries and wrong-site surgery
  - restraint-related injuries or death
  - falls
  - pressure ulcers

Do No Harm

Medical Errors !



The Harvard study of Patient Safety

- A Study of the impact of medical errors:

- Harvard Medical Practice Study Retrospective study
  - Reviewed >30,000 charts from randomly selected patients in acute and non-acute hospitals in New York
  - 3.6% of hospitalized patients experienced adverse events resulting in harm
  - 70% of these events resulted in disability lasting less than 6 months, 13.6% resulted in death, 2.7% permanent disability

The Australian study of Patient Safety

- Quality of Australian Health Care Study in 1995
  - Placed greater emphasis on **quality of care** than negligence, i.e., could the adverse event be prevented?
- Reviewed >14,000 charts from 28 hospitals
  - 16.6% of hospitalized patients experienced adverse events
    - 77.1% of those had disability lasting less 12 months
    - 13.7% with permanent disability
    - 4.9% ended in death
  - 51% of the adverse events were considered preventable

> High medical errors→ high adverse events
> Not all medical errors lead to adverse events
> Medical errors are so common that they are considered an epidemic

The History of Patient Safety

- In early 1995 an epidemic of errors flash up case study
  - Michigan --a surgeon performing a mastectomy on a 69-year-old patient removed the wrong breast
  - New York--a woman died when a doctor mistook her dialysis catheter for a feeding tube and ordered food to be pumped into her abdomen
  - Tampa --a 51-year-old diabetic had the wrong foot amputated and a 73-year-old retired electrician died when a therapist mistakenly disconnected his ventilator

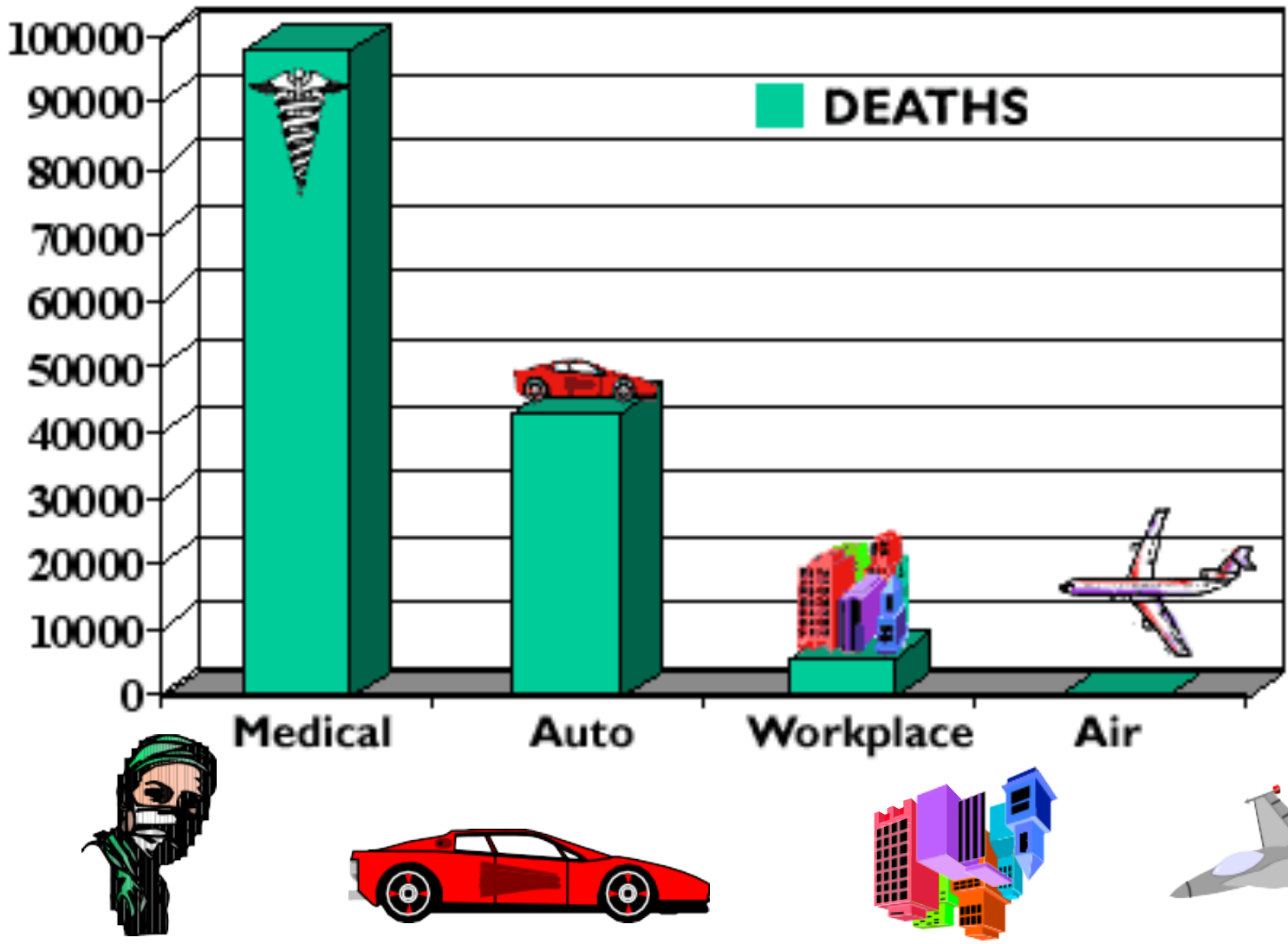
Err is Human;

- The Institute of Medicine (IOM) study “To Err is Human; Building a Safer Healthcare System”
- Adverse events occur in **2.9 to 3.7%** of all hospitalizations
- 44,000 to **98,000** patients dies a year as a result of medical errors
- Source at http://books.nap.edu/openbook.php?isbn=0309068371

- Institute of Medicine (IOM) estimated that around 98,000 patients die each year as a consequence of preventable errors. Likewise, a study of two UK hospitals found that **11%** of admitted patients experienced adverse events of which 48% of these events were most likely preventable if the **right knowledge was applied**.

- The **under-utilization** of healthcare data- information - knowledge contributes to improper clinical decisions, medical errors, under-utilization of resources and raise in healthcare delivery costs

Annual Accidental Deaths



Medical errors are 1st-5th most common cause of death in the world
The difference is that RTA are numbers while medical errors are estimates (underreported)
Pressure ulcers are considered a direct error

3rd

leading cause of Death in USA ?

Medical Errors

1200 per day / **50** per hour

- The total number of Americans dying prematurely from medical errors was about **400,000 per year***

This number highly increasing since the 90s

- The **epidemic of patient harm in hospitals** must be taken more seriously if it is to be curtailed**

*Office of the Inspector General (OIG) of the Department of Health and Human Services

** Journal of Patient Safety: September 2013 - Volume 9 - Issue 3 - p 122–128
doi: 10.1097/PTS.0b013e3182948a69

- **One in 5** patients discharged from the hospital end up sicker within 30 days and **half** are medication related
- **One of 10** inpatients suffers as a result of a mistake with medications cause significant injury or death
- Preventable medical errors cost the US $17 to $ **29** billion dollars a year
- Source: Safe Practices for Better Healthcare Why Implement Practices to Improve Safety at http://www.qualityforum.org/News_And_Resources/Press_Kits/Safe_Practices_for_Better_Healthcare.aspx

Cost of Medical Error

- Estimated direct cost of medical error in US $**17** billion

- Preventable adverse events to Medicare patients estimated to cost in excess of $880 million annually

- A study from 2008 revealed overall cost of medical error in the US to be >$**19.5** billion
  - Total cost per error approx. $**13,000**
  - >2500 avoidable deaths
  - >10 million days of lost productivity at work, costing $1.1 billion in short-term disability claims

Current Objectives

- **Endorsement** of CPOE
- Establish CPOE as an Institutional Commitment and **Goal**
- Identify CPOE as a Quality and Safety Improvement **Initiative**

We have to use CPOE for **quality and safety**

Types of Error

- Diagnostic
  - Failure to order appropriate test
  - **Delay in diagnosis**
  - Failure to act on results or monitoring
- Treatment
  - Error in the performance of an operation, procedure, or test
  - Error in administering the treatment
  - Error in the dose or method of using a drug
- Preventative
  - Failure to provide appropriate monitoring or follow-up
  - Failure to provide prophylactic treatment
- Others
  - Failure of communication
  - Equipment failure organizational error leads to medical eror. Ex. Gas supply, electricity.
  - Other system failure

Type of Errors

Preventive	Diagnostic	Treatment	Other
• Failure to provide prophylactic treatment • Inadequate monitoring or follow-up of treatment	• Error or delay in diagnosis • Failure to employ indicated tests • Failure to act on results of monitoring or testing	• Error in the performance of an operation, procedure, or test • Error in administering the treatment • Error in the dose or method of using a drug • Avoidable delay in treatment or in responding to an abnormal test	• Failure of communication • Equipment failure • No Policy/ procedure • Other system failure • Poor coordination in the care plan

Estimation for Cost of Most Common Medical Errors

Event	Number of injuries 2008	% considered due to error	Medical cost per event	Total cost per event
Pressure ulcers	394,699	>90	$8730	$10,288
Post-operative infections	265,995	>90	$13,312	$14,458
Mechanical complication of device, implant or graft	268,353	10-35	$17,709	$18,771
Hemorrhage complicating procedure	156,433	35-65	$8,665	$12,272

Organizations should put into mind that when spending a lot of money on a system for preventing errors they're eventually saving money by reducing medical errors

Something significant

is wrong or missing

in Healthcare

"Modern healthcare is the ***most complex human activity*** *there is, due to interpersonal relationships between many different clinicians with different expertise and interests, and we haven't figured out how to make that work well.*

We have come to a full stop against a complex environment that resists accepting change on the scale clearly required"

Lucian Leape, MD

Founder of the Modern Patient Safety Movement
Adjunct professor of health policy at Harvard University
"Error in Medicine," published in JAMA, 1994

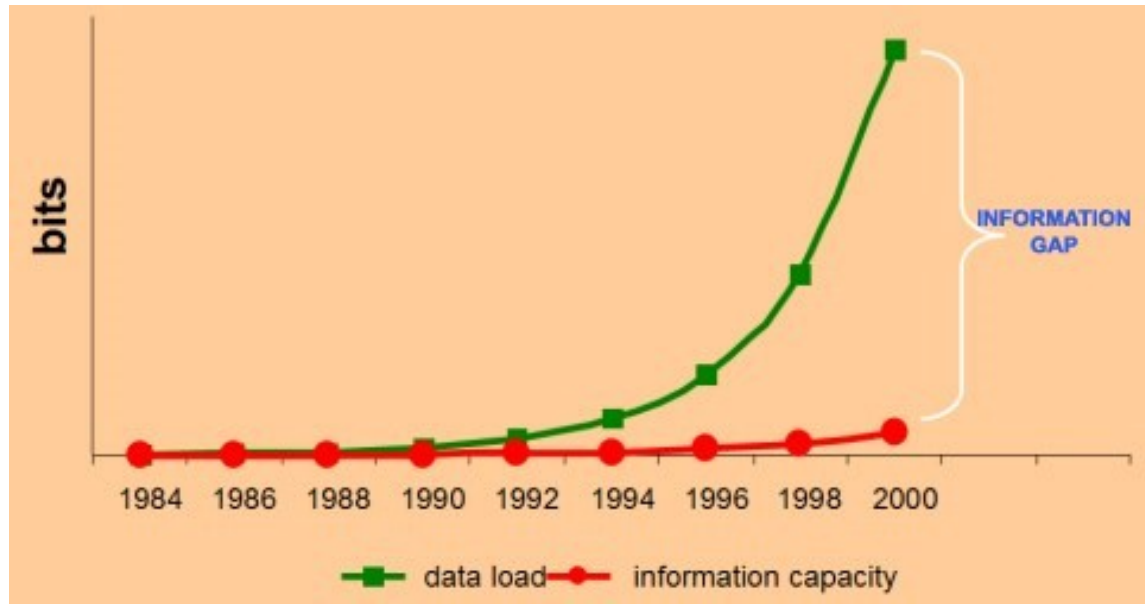
- "the science and technologies involved in healthcare -- the knowledge, skills, care interventions, devices and drugs – have advanced **more rapidly than our ability to deliver them safely, effectively, and efficiently"**
  - IOM. 2001. Crossing the Quality Chasm: A New Health System for the 21st Century.

Why is Healthcare Prone to Error?

- Multiple and varied interactions with technology, tools, and devices between people, technology, and so on.
- Many individuals involved in care
- Multiple hand-offs between shifts and teams
- High acuity of illness
- Distracting work environment working in ER, distraction from people
- Rapid, time-pressured decisions
- High volume, unpredictable patient flow High volume of patients, work flow
- Multiple step processes ex. treatment

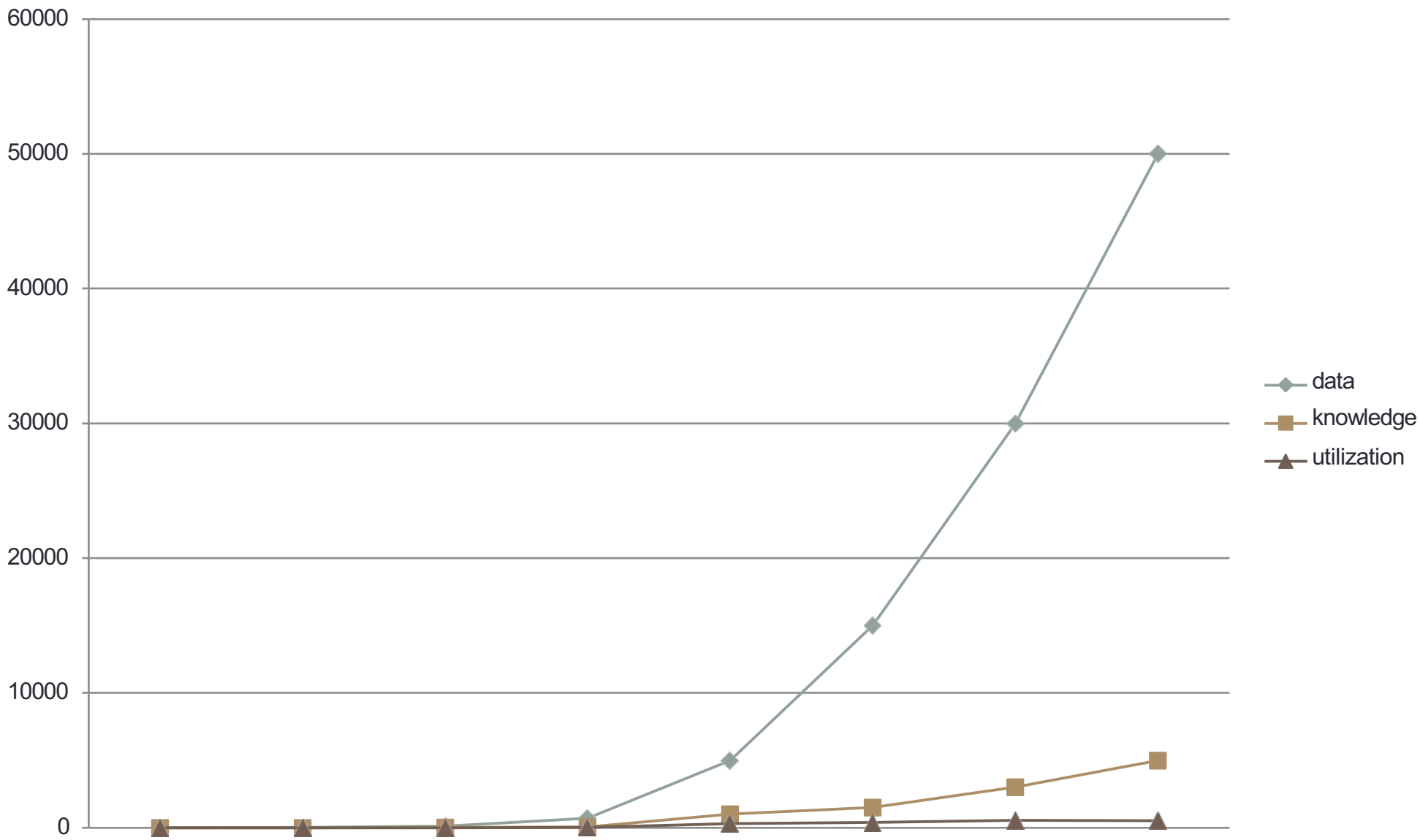
Flood of Information

- Huge gap in data acquisition and information → knowledge capacity



System can process data into information and knowledge. The amount of knowledge is huge therefore, it is not always utilized.

Data – knowledge - utilization



A US study showed that healthcare is the biggest producer of data in the world.

What Medical Informatics tools can?…

- **Improve communication** ex.CPOE
- Make knowledge more readily accessible ex. Evidence based medicine, drug library
- Assist with calculations
- Perform checks in real time ex. When you forget that the patient has allergies to certain drug the system will remind you
- Assist with monitoring
- Provide decision support
- Require key pieces of information (dose, e.g.)
- And more….

Why health Informatics?

- Improve the access of care Consumer health informatics
- Access to educational opportunities for health professionals as well as consumers CPOE
- Efficient communications and documentations EHR
- Cost effective telemedicine ex. Instead of having a radiologist available at all times
- Consumer (patient) engagement
- Prompt alerts and notifications
- Decision support system
- Manage data and store information
- Secured access and defined privileges

Why health Informatics?

- Protocol guided and standardized practices CPOE, and many other things if applied correctly
- Accessible documentations
- Legible orders, requests, and reports
- Integrated care delivery
- Support Lean processes toward more efficient workflows
- Facilitate productivity measurements and monitoring
- Reinforce clinicians compliance on evidence-based practices.
- Others …….

Local study on medications error

Methodology:

Study setting:

The study took place at King Khalid University Hospital in the outpatient and inpatient pharmacies from October 2011 to April 2012.

Study subject:

The target population for this study was handwritten and electronic prescriptions.

Study design:

Prospective study of randomized collection of prescriptions.

Just a Culture Principles

- **Values** and expectations-what is important to the organization
- **System** design and continual redesign of system and address processes and systems so it does not happen to someone else
  - Coaching and open environment
- **Peer to peer** coaching where helping one another to stay safe and make sure things are being done correctly
  - Just culture (blame free) algorithms can help
- Patient safety needs to be viewed as a **strategic** priority
- The entire hospital needs to be focused on patient safety if a culture of safety is to be established

Dekker S. *Just Culture: Balancing Safety and Accountability*. Burlington, VT: Ashgate Publishing;; 2008.
Marx D. *Patient Safety and the Just Culture: A Primer for Health Care Executives*. New York, NY: Trustees of Columbia University;; 2001.

Blame culture → second victim (person involved in the error) → depression of second victim

Examples:

- Having a patient safety **plan**
- Doing an **annual** report card, use **trigger tools**
  (easily shows a person's mistake before it's been made)
- Have a patient safety committee
- Many also have separate medication management committee from safety committee (more **attention**)
- **Education** for staff to make sure they know near misses must be included in definition of medical error
- Doing patient safety walkabout **rounds** by senior leaders

Examples:

- Having safety department **champion**
- Provide **literature** and articles on patient safety on intranet
- Considering patient safety week **fair** with local articles in newspaper and patient safety literature
- Board **report** at least yearly, consider more frequent, written reports of sentinel events, and whether patient informed
- Considering **training** & development

It's complicated environment when we say medical errors that dose not mean that doctors are careless

As was found in studies, less than 2% of errors are due to intentional or personal errors; 98% of errors are due to environmental factors

Key success of a Culture of Safety

- **Acknowledgment** of the high-risk nature of an hospital's activities and the determination to achieve consistently safe operations
- A **blame-free** environment where individuals are able to report errors or near misses without fear of reprimand or punishment
- **Encouragement** of collaboration across ranks and disciplines to seek solutions to patient safety problems
- Organizational **commitment** and resources to address safety concerns

People Factors in Error

- Fatigue ex. Being on call
- Interruptions
- Unfamiliar situations (new cases)
- Miscommunication
- Heavy workload

When a mistake has been made you have to make it visible, not by showing it on social media, but by reporting/documenting it. Try not to mention the name of the person who made the mistake.

Event ‘Management’

Action in order:

- **Prevent** failure but if you can’t,
- Make failure **visible** and
- Prevent **adverse** effects of failure or
- **Mitigate** the adverse effects
- **Learn** from all events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Firestone will close its tire factory in eliminating nearly 2,000 jobs. Parent gestone says it will lose money this year ne in 30 years. 3B.

hing for peace in Mideast

f State Colin Powell arrives in the Middle up the Israeli-Palestinian cease-fire. He'll an leader Yasser Arafat today to curb vio- Israelis. 9A.

oric visit to Ukraine ends

illion people gather in western Ukraine Pope John Paul II on Wednesday the fi- five-day trip aimed at bringing Catholic

5 slain siblings laid to rest

Russell Yates touches the casket of his 7-year-old son, Nicholas, at the funeral for his children Wednesday in Houston. "I'm sorry I didn't get to see you grow up," he said of his daughter, Mary. The mother, Andrea Yates, is charged with capital murder. 3A

Hospital mistakes must be disclosed

Accreditation at risk

USA TODAY

Thursday, June 28, 2001

Hospital mistakes must be disclosed

Accreditation at risk if patients aren't told

By Robert Davis

Hospitals must now tell patients and their families when they have been hurt by a medical error, according to nationwide standards that take effect Sunday.

The standards by the nation's leading health care accrediting agency are the first to hold hospitals accountable for a higher

Patient Safety and Quality Improvement Act of 2005

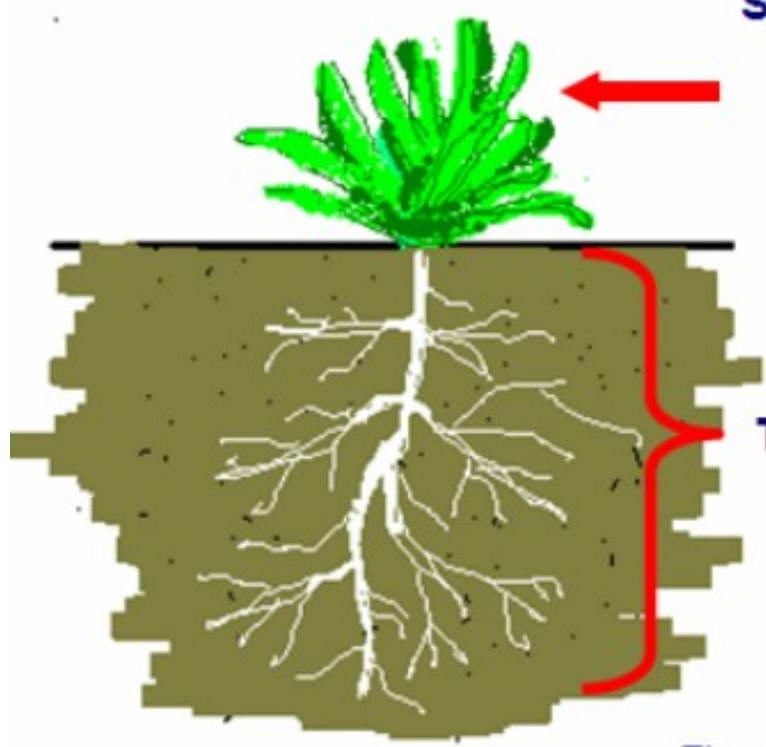
- Signed into Law 7/29/05
- Nationwide Goals
  - "To encourage the voluntary reporting of medical errors"
  - Report to "Certified Patient Safety Organizations"
- Many providers fear repercussions
  - Act provides federal legal privilege and confidentiality protection

Errors Provide Useful Information

- We can learn more from our failures than from success
- Our processes can be improved when studied

"*Give me a fruitful error anytime, full of seeds, bursting with its own corrections. You can keep your sterile truth to yourself*."
Vilfred Pareto

Root Cause Analysis Basics



Symptom of the problem.
"The Weed"
Above the surface
(obvious)

The Underlying Causes
"The Root"
Below the surface
(not obvious)

The word root, in root cause analysis, refers to the underlying causes, not the one cause.

5 WHYs used with RCA. Looking at the root (cause) of the problems not the effect!

The point of documenting medical errors is not to blame anyone, but to learn from past mistakes and avoid making them in the future.
Ex. Someone wrote a wrong prescription? Why was the mistake made? A junior wrote the prescription. Why was he the one who wrote it? A consultant wasn't available. We got to the root of the problem which was shortage of staff. (Root cause analysis)

Which patients are most at risk of medication error?

- patients on **multiple** medications
- patients with **another** condition, e.g. renal impairment, pregnancy, liver impairment
- patients who **cannot communicate** well
- patients who have **more than one doctor**
- patients who do not take an **active role** in their own medication use
- **children** and babies (dose calculations required)

Examples ofAnalysis Tools

- Root **Cause** Analysis (RCA)
  – causal or risk trees
- Data **Mining** and Case-Based Reasoning (CBR)
  – trend and cluster analysis
  Failure Mode and Effects Analysis (FMEA)
  Probabilistic Risk Assessment (PRA)
- **Sense-Making**

Systems Process Changes Structure, Environment, and People

- Simplification
- Standardization different standards in different countries
- Process design includes prompts
- Elimination of sound/look-alikes abbreviatons, perscriptions
- Environment/product improvements
- Training
- Teamwork
- Communication

Selected Resources for Patient Safety Information

- Agency for Healthcare Research and Quality www.ahrq.gov
- Institute of Medicine of the National Academies www.iom.edu
- The Joint Commission www.jointcommission.org
- Institute for Safe Medication Practices www.ismp.org
- National Patient Safety Foundation http://npsf.org/
- JCAHO “Speak Up” program
  - http://www.jcaho.org/general+public/patient+safety/speak+up/index.htm
- Also WHO

National Academy of Science's Institute of Medicine (IOM)

- In 2001, the IOM laid out six dimensions of quality for health care.
- According to the IOM, health care should be
  - **Safe**
  - Effective
  - Patient-centered
  - Timely
  - Efficient
  - Equitable

Why is Patient Safety Important to Me?

- It can save lives
- It can make **YOU** a better physician
- It is part of every hospital plan – no matter where you work
- You can help others in your team/hospital save lives and be better physicians/staff
- Required by accreditation bodies
- **It is a required part in most resident education curriculum worldwide**
- **Etqan**

Thank you

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